

**WHAT IS CLAIMED IS**

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1. A communication device comprising:  
a transmitter for transmitting an ultra  
wide band wireless wave pulse;  
a plurality of receivers which are  
10 disposed equidistant from the transmitter and  
receive the ultra wide band wireless wave pulse; and  
distance-measuring equipment which detects  
a distance or a direction to an object based on  
reception times when each of the receivers receives  
15 the ultra wide band wireless wave pulse directly  
from the transmitter and an object-reflected wave  
thereof.

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2. The communication device as claimed in  
claim 1, wherein communication is performed by the  
transmitter and the receivers using the ultra wide  
25 band wireless wave pulse.

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3. A vehicle-installed system comprising:  
a plurality of appliances, each of which  
is installed in a vehicle and is equipped with a  
communication device which performs communication  
between the appliances using an ultra wide band  
35 wireless wave pulse.

4. A communication device comprising:  
first communicating means for performing  
5 communication using an ultra wide band wireless wave  
pulse; and  
communication controlling means which  
searches for a second communicating means around the  
first communicating means and establishes a  
10 communication network with the second communicating  
means.

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5. The communication device as claimed in  
claim 4, wherein the communication controlling means  
establishes a communication network with a third  
communicating means which is located out of a  
20 communication area of the first communicating means  
but is located within the communication area of the  
second communicating means with which communication  
has been established.

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6. A communication system comprising:  
a plurality of communication devices, each  
30 of which is able to establish communication with  
another communication device located within a  
predetermined area by searching for the other  
communication device located within the  
predetermined area, wherein communication with yet  
35 another communication device located out of the  
predetermined area is established via a  
communicating device located within the

predetermined area.

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7. An anti-theft system comprising:

a communication device for transmitting  
and receiving an ultra wide band wireless wave  
pulse; and

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a warning device which generates an alarm  
if a moving object is continuously detected in a  
predetermined area for a predetermined time, said  
detection of the moving object being based on a  
reception of a moving object-reflected wave of the  
15 ultra wide band wireless wave pulse by the  
communication device.

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8. A communication system comprising:

a detector including a transmitter which  
transmits a response request using an ultra wide  
band wireless wave pulse; a plurality of receivers  
25 which are disposed equidistant from the transmitter  
and receive the ultra wide band wireless wave pulse;  
and distance-measuring equipment which detects a  
distance or a direction to an object based on  
reception times when each of receivers receives the  
30 ultra wide band wireless wave pulse directly from  
the transmitter and an object-reflected wave  
thereof; and

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a response device including a receiver  
which is installed on the object and receives the  
ultra wide band wireless wave pulse transmitted from  
the transmitter of the detector; and a transmitter  
which transmits a response request using another

ultra wide band wireless wave pulse in response to the reception of the ultra wide band wireless wave pulse from the detector by the receiver of the response device.